

reducing barometric readings to the standard value of gravity adopted by the International Bureau of Weights and Measures, supplementing a table that has been introduced for directly reducing barometer readings from the value of gravity at the place of observation to its standard value.

The new values of vapor pressure and of gravity acceleration thus obtained, together with a recent and more accurate determination of the density of mercury, have called for an extensive revision of numerous other tables, and especially of those for the reduction of psychrometric observations, and the barometrical tables.

Among the new tables added are those for converting barometric inches and barometric millimeters into millibars, for determining heights from pressures expressed in dynamic units, tables of gradient winds, and tables giving the duration of astronomical and civil twilight, and the transmission percentages of radiation through moist air.

The tables of International Meteorological Symbols, of Cloud Classification, of the Beaufort Scale of Winds, of the Beaufort Weather Notation, and the List of Meteorological Stations, are among those extensively revised.

Tables for reducing barometric readings to sea level, and tables of logarithms of numbers, of natural sines and cosines, of tangents and cotangents, and for dividing by 28, 29, and 31, with a few others have been omitted from this edition.

BEN NEVIS OBSERVATORY REOPENED.

[Reprinted from *Aeronautics* (London), July, 1919, p. 43.]

The Air Ministry, states the Observer, is about to take over the observatory erected on the summit of Ben Nevis 35 years ago by the Scottish Meteorological Society, and utilize it in connection with their system of weather forecasting for aerial purposes. This will be an important addition to the chain of meteorological stations already established, as by its means continuous observations of the physics of the upper air will be possible at an elevation of well over 4,000 feet above sea level.

For 20 years the Scottish Meteorological Society maintained the Ben Nevis Observatory, and daily records were obtained for comparison with the sea-level records at Fort William Observatory at the foot of the mountain. But its upkeep was a heavy drain on the society's resources, necessitating an expenditure of £1,000 a year, toward which the Government contributed only £100, as a grant from the meteorological committee. About the year 1900 the society intimated that it would be compelled to close the observatory; but, fortunately, Mr. Mackay Bernard, of Dunsinnon, came forward and promised £500 annually for four years. The society therefore decided to continue the observatory in the hope that the Government would follow the lead of continental nations—German especially—and make itself responsible for this high-level meteorological observatory.

But instead of additional Government assistance, in 1904 the grant from the meteorological committee was withdrawn, and the Scottish Meteorological Society, unable to guarantee the cost of the institution, in that year, withdrew the staff, and the observatory closed. Since then the buildings have fallen into a sad state of repair, and last year a party who ascended Ben Nevis reported that the observatory was falling to pieces.

Now that the Air Ministry has taken over the observatory it will probably be entirely rebuilt and equipped with modern instruments. Meteorologists know very

little about the upper air, especially the prevailing winds and currents, and their relation to the surface winds. These are some of the things that must be scientifically investigated before aviation will be as safe and reliable as ocean traveling, and if observatories similar to that on Ben Nevis were established by the Air Ministry on all the elevated peaks of the British Isles it would hasten forward the solution of the problems of the upper air, for which we now mainly rely on the automatic records brought to earth by ballons-sondes.

MOUNTAIN METEOROLOGICAL STATIONS IN EUROPE.

[Reprinted from *Scientific American*, New York, Aug. 16, 1919, p. 153.]

Mountain meteorological stations in Europe, as they were before the war, are described in a recent number of *Naturwissenschaften* by Prof. F. Klengel. Of the 21,500 stations in operation in various European countries, 660 were more than 1,000 meters above sea level, about 150 more than 1,500 meters, 44 more than 2,000 meters, 8 more than 2,500 meters, and 1, the Sonnblick Observatory, above 3,000 meters. The observatory of the Sonnblick (3,106 meters) is the highest meteorological station in Europe that is in operation the year round, but there are still higher stations that remain open a few months each year; e. g., the Vallot Observatory on Mont Blanc (4,358 meters) and the Regina Margherita Observatory on Monte Rosa (4,560 meters). These very lofty establishments are inaccessible in winter, but are used for various investigations in summer. The above enumeration of lofty stations does not include a large number of seasonal snow gages, or so-called "totalizers," which have been installed on an extensive scale in the Alps by the Swiss Meteorological Service. These gages are visited once a year, when the gage is emptied and its contents measured.

THE HARVARD STATION IN JAMAICA.

By WILLIAM H. PICKERING.

[Review. *Annals of the Harvard College Observatory*, vol. 82, No. 1, pp. 37.]

In consideration of the condition upon which property, to the value of \$230,000, was left to the Harvard College Observatory by the will of the late Uriah A. Boyden, for the purpose of furthering astronomical research "at such elevation as to be free, as far as practicable, from the impediments to accurate observations which occur in the observatories now existing, owing to atmospheric influences," three expeditions were sent to Jamaica.¹ It was decided to locate the observatory at Mandeville (elevation, 2,100 feet), as the place most satisfactorily fulfilling the conditions of the bequest; yet for the value of astronomers and other interested parties, a series of meteorological observations, such as were pertinent to the astronomical work, were carried out. Thus certain observations, usually made at meteorological stations were omitted, while others, which are quite unusual were made.

Temperature.—In the thermometric observations the equipment consisted of standard maximum and minimum thermometers and a Richard thermograph. These were not exposed in a shelter, but upon the porch of a house facing the east. The only ill effect, from a thermometric standpoint, was due to the sun shining upon

¹ Cf. "The meteorological activities of the late Prof. Edward C. Pickering," by R. De C. Ward, *MONTHLY WEATHER REVIEW*, April, 1919, 47: 241-242.